



SEQUENCE LISTING

<110> Bron, Sierd
Jongbloed, Jan D.H.
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Van Dijl, Jan M.

<120> Twin-Arginine Translocation in Bacillus

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<141> 2001-09-17

<150> US 60/233,610
<151> 2000-09-18

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Lys Gln Asp Lys Thr Ser Gln Asp Ala Asp Phe Thr Ala Lys Thr Ile
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 35 40 45
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 85 90 95
 Val Ala Asn Asp Pro Glu Lys Ala Ser Asp Glu Ala His Thr Ile His
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 Asn Pro Val Val Lys Asp Asn Glu Ala Ala His Glu Gly Val Thr Pro
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50 55 60
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85 90 95
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100 105 110
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Phe Pro Phe Val Val Asp Phe Met Lys Arg Ile Ser Gln Asp Leu Asn
130 135 140
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Phe Leu Thr Arg Leu Gly Ile Val Thr Pro Met Phe Leu Ala Lys Ile
180 185 190
Arg Lys Tyr Ala Tyr Phe Thr Leu Leu Val Ile Ala Ala Leu Ile Thr
195 200 205
Pro Pro Glu Leu Leu Ser His Met Met Val Thr Val Pro Leu Leu Ile
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Ala Phe Leu Phe Val Gln Asp Ile Tyr Asp Trp Leu Ile Arg Asp Leu
35 40 45
Asp Gly Lys Leu Ala Val Leu Gly Pro Ser Glu Ile Leu Trp Val Tyr
50 55 60

Met	Met	Leu	Ser	Gly	Ile	Cys	Ala	Ile	Ala	Ala	Ser	Ile	Pro	Val	Ala
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Arg	Lys	Val	Thr	Ile	Met	Tyr	Ile	Met	Tyr	Ile	Pro	Gly	Leu	Phe	Ala
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<210> 38
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<210> 39

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Leu Ile Phe Ile Ala Ile Ala Ile Leu Phe
35 40

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subtilis

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Met Val Ser Ile Arg Arg Ser Phe Glu Ala Tyr Val Asp Asp Met Asn
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Ile Ile Thr Val Leu Ile Pro Ala Glu Gln Lys Glu Ile Met
20 25 30

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Leu Gly Ile Thr Ile Leu Ser Phe Val Ile Met Lys Ala Ala Pro Gly
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subtilis

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Leu Ser Val Thr Ser Leu Phe Ala Leu Gln Pro Ser Ala Lys Ala Ala
20 25 30
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subtilis

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Phe Val Ile Val Thr Val Thr Phe Phe Leu Met Gln Ala Ala Pro Gly
20 25 30

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<220>
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subtilis

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20 25 30
Cys Ile Thr Ile Trp Asn Ala Leu His Arg
35 40

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subtilis

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Ala Gly Lys Ile Ala Gly Leu Ser Leu Gly Leu Thr Ile Ala Gln Ser
35 40 45
Val Gly Ala Phe Glu Val
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subtilis

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Val Arg Phe Ala
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20 25

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<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 61
Met Lys Lys Thr Leu Thr Thr Ile Arg Arg Ser Ser Ile Ala Arg Arg
1 5 10 15
Leu Ile Ile Ser Phe Leu Leu Ile Leu Ile Val Pro Ile Thr Ala Leu
20 25 30
Ser Val Ser Ala Tyr Gln Ser
35

<210> 62
<211> 35
<212> PRT
<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 62

Met Lys Lys Arg Arg Asn Phe Arg Phe Ile Ala Ala Phe
1 5 10 15
Leu Val Leu Ala Leu Met Ile Ser Leu Val Pro Ala Asp Val Leu Ala
20 25 30

Lys Ser Thr
35

<210> 63
<211> 33
<212> PRT
<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 63
Lys Arg Arg Lys Phe Ser Ser Val Val Ala Ala Val Leu Ile Phe Ala
1 5 10 15
Leu Ile Phe Ser Leu Phe Ser Pro Gly Thr Lys Ala Ala Ala Gly
20 25 30

Ala

<210> 64
<211> 35
<212> PRT
<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 64
Met Glu Met Phe Asp Leu Glu Phe Met Arg Arg Ala Phe Leu Ala Gly
1 5 10 15
Gly Met Ile Ala Val Met Ala Pro Ile Leu Gly Val Tyr Leu Val Leu
20 25 30

Arg Arg Gln
35

<210> 65
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 65
Met Lys Lys Arg Arg Lys Ile Cys Tyr Cys Asn Thr Ala Leu Leu Leu
1 5 10 15
Met Ile Leu Leu Ala Gly Cys Thr Asp Ser
20 25

<210> 66
<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 66

Met Arg Arg Ile Leu Ser Ile Leu Val Phe Ala Ile Met Leu Ala Gly
1 5 10 15

Cys Ser Ser Asn

20

<210> 67

<211> 43

<212> PRT

<213> Artificial Sequence

<220>

<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 67

Met Ser Ala Gly Lys Ser Tyr Arg Lys Lys Met Lys Gln Arg Arg Met
1 5 10 15

Asn Met Lys Ile Ser Lys Tyr Ala Leu Gly Ile Leu Met Leu Ser Leu
20 25 30

Val Phe Val Leu Ser Ala Cys Gly Asn Asn Asn
35 40

<210> 68

<211> 42

<212> PRT

<213> Artificial Sequence

<220>

<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 68

Lys Lys Arg Val Ala Gly Trp Tyr Arg Arg Met Lys Ile Lys Asp Lys
1 5 10 15

Leu Phe Val Phe Leu Ser Leu Ile Met Ala Val Ser Phe Leu Phe Val
20 25 30

Tyr Ser Gly Val Gln Tyr Ala Phe His Val
35 40

<210> 69

<211> 38

<212> PRT

<213> Artificial Sequence

<220>

<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 69
Met Arg Arg Ser Cys Leu Met Ile Arg Arg Arg Lys Arg Met Phe Thr
1 5 10 15
Ala Val Thr Leu Leu Val Leu Leu Val Met Gly Thr Ser Val Cys Pro
20 25 30
Val Lys Ala Glu Gly Ala
35

<210> 70
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 70
Met Arg Ile Gln Lys Arg Arg Thr His Val Glu Asn Ile Leu Arg Ile
1 5 10 15
Leu Leu Pro Pro Ile Met Ile Leu Ser Leu Ile Leu Pro Thr Pro Pro
20 25 30
Ile His Ala Glu Glu Ser
35

<210> 71
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 71
Met Leu Arg Asp Leu Gly Arg Arg Val Val Ala Ile Ala Ala Ile Leu
1 5 10 15
Ser Gly Ile Ile Leu Gly Gly Met Ser Ile Ser Leu Ala Asn Met Pro
20 25 30

<210> 72
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 72
Met Lys Lys Met Ser Arg Arg Gln Phe Leu Lys Gly Met Phe Gly Ala
1 5 10 15
Leu Ala Ala Gly Ala Leu Thr Ala Gly Gly Gly Tyr Gly Tyr Ala Arg
20 25 30
Tyr Leu

<210> 73
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 73
Met Arg Arg Phe Leu Leu Asn Val Ile Leu Val Ala Ile Val Leu
1 5 10 15
Phe Leu Arg Tyr Val His Tyr Ser Leu Glu Pro Glu
20 25

<210> 74
<211> 29
<212> PRT
<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 74
Met Phe Glu Ser Glu Ala Glu Leu Arg Arg Ile Arg Ile Ala Leu Val
1 5 10 15
Trp Ile Ala Val Phe Leu Leu Phe Gly Ala Cys Gly Asn
20 25

<210> 75
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 75
Met Gln Lys Tyr Arg Arg Asn Thr Val Ala Phe Thr Val Leu Ala
1 5 10 15
Tyr Phe Thr Phe Phe Ala Gly Val Phe Leu Phe Ser Ile Gly Leu Tyr
20 25 30
Asn Ala Asp Asn Leu
35

<210> 76
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 76

Met Met Leu Asn Met Ile Arg Arg Leu Leu Met Thr Cys Leu Phe Leu
 1 5 10 15
 Leu Ala Phe Gly Thr Thr Phe Leu Ser Val Ser Gly Ile Glu Ala Lys
 20 25 30
 Asp Leu

 <210> 77
 <211> 44
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> predicted twin-arginine signal peptides of B.
 subtilis

 <400> 77
 Met Ala Glu Arg Val Arg Val Arg Val Arg Lys Lys Lys Lys Ser Lys
 1 5 10 15
 Arg Arg Lys Ile Leu Lys Arg Ile Met Leu Leu Phe Ala Leu Ala Leu
 20 25 30
 Leu Val Val Val Gly Leu Gly Gly Tyr Lys Leu Tyr
 35 40

 <210> 78
 <211> 47
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> predicted twin-arginine signal peptides of B.
 subtilis

 <400> 78
 Met Ser Asp Glu Gln Lys Lys Pro Glu Gln Ile His Arg Arg Asp Ile
 1 5 10 15
 Leu Lys Trp Gly Ala Met Ala Gly Ala Ala Val Ala Ile Gly Ala Ser
 20 25 30
 Gly Leu Gly Gly Leu Ala Pro Leu Val Gln Thr Ala Ala Lys Pro
 35 40 45

 <210> 79
 <211> 54
 <212> PRT
 <213> Bacillus subtilis

 <400> 79
 Met Ala Tyr Asp Ser Arg Phe Asp Glu Trp Val Gln Lys Leu Lys Glu
 1 5 10 15
 Glu Ser Phe Gln Asn Asn Arg Phe Asp Arg Arg Lys Phe Ile Gln Gly
 20 25 30
 Ala Gly Lys Ile Ala Gly Leu Ser Leu Gly Leu Thr Ile Ala Gln Ser
 35 40 45
 Val Gly Ala Phe Glu Val
 50

 <210> 80
 <211> 65

<212> PRT

<213> Streptomyces coelicolor

<400> 80

Met Thr Pro Ala Asn His Gln Ala Pro Thr Ser Ala Pro Ser Pro Ala
1 5 10 15
Pro Ser Gln Ser Ser His Ala Pro Glu Leu Arg Ala Ala Ala Arg Ser
20 25 30
Leu Gly Arg Arg Arg Phe Leu Thr Val Thr Gly Ala Ala Ala Ala Leu
35 40 45
Ala Phe Ala Val Asn Leu Pro Ala Ala Gly Thr Ala Ser Ala Ala Glu
50 55 60
Leu
65

<210> 81

<211> 60

<212> PRT

<213> Streptomyces coelicolor

<400> 81

Met Ala Pro Thr Gly Arg Pro Ser Ala Leu Ala Glu His Ala Phe Ser
1 5 10 15
Pro His Asp Ala Val Leu Gly Ala Ala Ala Arg His Leu Gly Arg Arg
20 25 30
Arg Phe Leu Thr Val Thr Ala Ala Ala Ala Leu Ala Phe Ser Thr
35 40 45
Asn Leu Pro Ala Arg Gly Ala Val Ala Ala Pro Glu
50 55 60

<210> 82

<211> 47

<212> PRT

<213> Streptomyces coelicolor

<400> 82

Met Thr Ser Arg His Arg Ala Ser Glu Asn Ser Arg Thr Pro Ser Arg
1 5 10 15
Arg Thr Val Val Lys Ala Ala Ala Ala Gly Ala Val Leu Ala Ala Pro
20 25 30
Leu Ala Ala Ala Leu Pro Ala Gly Ala Ala Asp Ala Ala Pro Ala
35 40 45

<210> 83

<211> 53

<212> PRT

<213> Streptomyces tendae

<400> 83

Met Thr Pro Ala Ala Arg Pro Ser Gln His Ala Pro Glu Leu Arg Ala
1 5 10 15
Ala Ala Arg His Leu Gly Arg Arg Phe Leu Thr Val Thr Gly Ala
20 25 30
Ala Ala Ala Leu Ala Phe Ala Val Asn Leu Pro Ala Ala Gly Thr Ala
35 40 45
Ala Ala Ala Glu Leu
50

<210> 84
<211> 43
<212> PRT
<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 84
Met Ser Pro Ala Gln Arg Arg Ile Leu Leu Tyr Ile Leu Ser Phe Ile
1 5 10 15
Phe Val Ile Gly Ala Val Val Tyr Phe Val Lys Ser Asp Tyr Leu Phe
20 25 30
Thr Leu Ile Phe Ile Ala Ile Ala Ile Leu Phe
35 40

<210> 85
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 85
Met Lys Arg Arg Lys Phe Ser Ser Val Val Ala Ala Val Leu Ile Phe
1 5 10 15
Ala Leu Ile Phe Ser Leu Phe Ser Pro Gly Thr Lys Ala Ala Ala Ala
20 25 30
Gly Ala

<210> 86
<211> 43

<212> PRT
<213> Artificial Sequence

<220>
<223> predicted twin-arginine signal peptides of B.
subtilis

<400> 86
Met Lys Lys Arg Val Ala Gly Trp Tyr Arg Arg Met Lys Ile Lys Asp
1 5 10 15
Lys Leu Phe Val Phe Leu Ser Leu Ile Met Ala Val Ser Phe Leu Phe
20 25 30
Val Tyr Ser Gly Val Gln Tyr Ala Phe His Val
35 40